Gateway

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The ARRL Packet-Radio Newsletter

PS-186 STATUS

The first evaluation lot of PS-186 packet switch "rev A" printed-circuit boards arrived Tuesday, June 28. We built up the first board, and tested it June 30. Lo and behold, it worked on the first try! The diagnostic passes and the debugger runs. "Rev A" fixes six cuts-and-jumps that were required on the original board design and adds a UART for a diagnostic/control port so that none of the four high-speed ports need to be used for such functions. The new UART appears to work as anticipated. We also tested a new version of the debugger that operates through this UART port.

There are five boards in the evaluation lot. The other four will be built up within the next few days.

from Franklin Antonio, N6NKF
via CompuServe's HamNet

DIGICOM>64 UPDATE

Digicom>64 is a disk-based TNC emulation program for the Commodore 64 or 128 computer. It eliminates the need for a TNC and runs in conjunction with a simple modem circuit.

Digicom>64 distributor Barry Kutner, W2UP, has designed a modem circuit (based on YV1AQE's design) that uses the AM7910 modem chip. This design provides both HF and VHF operation. Other than setting the audio output level, no alignment is required. Power for the board is taken directly from the Commodore 64's cassette port, therefore, no external power supply is necessary.

A high quality PC board and complete parts kit are available. It includes the optional watchdog timer and reed relay output. The PC board is configured so that it may be plugged into the computer's cassette port or mounted remotely using a 6-conductor cable. Connectors for both configurations are included with each kit.

Software and hardware are available from Barry Kutner, W2UP, 614-B Palmer Lane, Yardley, PA 19067 (this is a new address) in the following packages: Digicom>64 software and modem schematics for $6, a blank modem PC board for $10.65, a blank modem PC board with Digicom>64 software for $14.95, a complete modem kit for $49.95 and an assembled and tested modem for $79.95. In the US and Canada, add $2.50 for $10-$50 orders and $3.50 for orders over $50.

from Barry Kutner, W2UP

VADCG TNC+ TERMINAL SOFTWARE RELEASED

Phil Sampson, VK8KJJ (PO Box 1442, Darwin NT 5794, Australia), has announced the first public release of packet radio terminal software (PAKIT, version 2.0) for the VADCG TNC+. The software is comprised of several ARC files with code for various systems and a common ARC file for files that are common to all systems.

In the interests of getting PAKIT to the user as quickly as possible, documentation has not been completed, however, users will find on-line context-sensitive Help that is sufficient to permit users to use most, if not all functions with a little experimentation. A comprehensive user document will be released in the future.

PAKIT is one of the few multifunctional terminal programs for the VADCG TNC+ and X.3/X.28 providing a packet radio specific environment that can be adapted to other uses through the PAKIT.INI configurations file. It eliminates the need to use compromised landline modem programs. PAKIT completely divorces the user from needing to know or understand the X.3 parameters and provides automatic control of all TNC parameters to suit the selected function.

PAKIT provides the following main functions with many options within each function.

Terminal emulation.

Private mailbox.

Propagation surveys.

Secure file transfer using the PAKIT1 binary or ASCII protocols.

PAKIT has evolved over the past three years with a spurt of activity during the past three months occupying about six hours per day to produce the latest rewrite and protocol debug. It is now comprised of more than 6000 lines of source code and uses extensive overlays and, for this reason, all PAKIT files should remain in a common directory and must be on line all of the time (floppy diskette users should leave the PAKIT diskette in the system). Overlays are used so that PAKIT may be fitted into the limited memory of the 64-kbyte, 8-bit systems as well as larger capacity 16-bit systems.

The PAKIT1 protocol was designed to be as efficient and simple as possible while allowing binary and ASCII file transfers with a method of ensuring file integrity at the receiving end.

This has been achieved and the protocol is capable of transferring data at optimum speed within computer and program limitations. PAKIT1 uses a series of tokens for end-to-end synchronization and communications. It is also designed to be simple to implement and incorporate into PBBS and mailbox systems.

PAKIT1 does not use the TNC+ transparent mode. It stuffs the DLE character much like the HDLC flag. This reduces overhead in setting parameters and TNC modes. Token lead-in characters are also stuffed, thereby making DLE and tokens transparent in the data stream.

Before data transfer, the sender and receiver select the relevant menu options from the Files menu and (provided they are linked) the PAKIT programs will synchronize and exchange information about the highest level of the protocol that can be supported (later versions will do wild cards, etc.). The file is then transferred filling all buffers until XOFF occurs. XON/XOFF controls the data transfer on the reverse channel. At any time, a station may type <CTRL-E> and an abort token will be sent to the remote end to kill the transfer.

Upon completion of the transfer, the sender transmits a done tokens and a single byte checksum character, which is unique to the transferred data. The receive end, having calculated the checksum of the incoming data, will determine if the file integrity has been maintained (no characters lost) and notify the sender of the result. There are 16 error messages in PAKIT1, which can describe any problems quite accurately. If all went well, the program returns to idle mode.

The philosophy behind PAKIT1 is to use the link protocol for character integrity, the overall checksum for file integrity and have maximum data flow in the forward direction. This means no checking is done within the transfer at the PAKIT1 level as is done with 128-byte blocks in XMODEM, for example. Lastly, PAKIT provides synchronization in order that no garbage characters appear in files and the operators need not have knowledge of the X.3 parameters required at either end.

from Phil Sampson, VK8KJJ
via The Australian Packeteer

G8BPQ AX.25 PACKET SWITCHING SYSTEM

Near the end of last year, I saw various bulletins on the MBX network concerning plans to increase the speed of the existing packet radio network, e.g., the High Speed Eastnet proposal. These led me to think in detail about how the existing system worked and I came to the conclusion that the current NET/ROM-TNC 2 combination was not an ideal building block for a fast, large network. The problem areas I foresaw were as follows.

The bottleneck of the multidropped asynchronous link used to interconnect the TNCs of a multichannel node would become the limiting factor and makes the use of high-speed external links rather pointless.

The maximum link speed was 9600 bauds, which may be adequate in the short term, but I have heard of plans for much higher speed microwave links.

The NET/ROM requirement for a separate call sign and alias (and hence NODES list entry) for each channel of a multichannel node means that the number of nodes in the system rapidly gets out of hand.

At about the same time, multiuser mailbox software was arriving and it seemed there must be a better way of using it rather than having an array of rigs, TNCs and multiport asynchronous cards. I, therefore, decided to develop a packet switching system which would be compatible with the existing network, but would overcome its problems.

System Overview

The system, which currently runs on an IBM PC or clone, provides the following features:

Multiple AX.25 links using a variety of Comms hardware (see below).

Link to NET/ROM asynchronous port.

Multistream WA7MBL DesqView-compatible COMBIOS interface applications within the PC allowing multiuser PBBSs direct access to the network.

Single call signs/aliases.

The Comms hardware is currently a Persyst DCP88 board, which provides four HDLC channels at, at least 64,000 bit/s. I hope to use the Pac-Comm PC-120 card to support low speed links (up to 9600 baud), but, as yet, I have been unable to get hold of one. The system will also allow the use of a standard TNC in KISS mode, which may provide an economical upgrade path for existing systems. The software is designed to allow easy implementation of drivers to support other hardware as it becomes available. It would be relatively easy to run it on a four-port 80186-based board.

Current Progress

I have been working on the system for about two months and it is currently just about usable, but still needs a few details sorted out and, no doubt, still contains a lot of bugs. I have not yet decided to what extent it should support Level 2 digipeating. Currently, it allows one digipeater on user links, but not on node-to-node links and does not function as a cross-band digipeater. The command handler needs a fair bit of tidying up (it currently only allows single letter abbreviations for the commands) and the internal TNC support is the bare minimum needed to support the WA7MBL PBBS. The system should allow a high-speed network to be developed, however, I have not addressed the problems of radios and modems for such a network and would be interested to hear from anyone who is working in that area.

from John Wiseman, G8BPQ,
via Connect International

TRAFFIC FLOWS FREELY THROUGH NEW JERSEY

The article titled "New Jersey Traffic: Not of the Garden Variety" that was published in Gateway, Volume 4, Number 10, was incorrect. The article contained references to the effect that packet radio traffic addressed with a TO field, but not containing an @PBBS entry could not be automatically forwarded through the New York-Philadelphia, that is, through New Jersey. This was only partially correct because there was only one network on one frequency that actually had this problem. The backbone networks, which carry traffic throughout New Jersey had no problem whatsoever and the one network that had the compatibility problem was corrected quickly.

from Richard Bauer, WA2HEB, SM SNJ and
Robert Anderson, K2BJG, SM NNJ

BLIND PACKETEER SEEKS ASSISTANCE

Paul Graziani, WD5BIV, is a blind ham trying to get on packet radio using a Commodore 64 computer and he needs a terminal or communications program that does not reside in memory locations 57000 to 57400 inclusively (programs that reside or use those portions of RAM interfere with his speech synthesizer, a Hear Say 1000 that plugs into the computer's game port.) If you can assist Paul, you can write to him at 119 Pearl St, Little Rock, AR 72205-5959 or telephone him at 501-372-7387. Your assistance is appreciated.

FIELD DAY PACKET RADIO QUERY

Al Kaiser, N1API, wonders how those who used packet radio on Field Day did. Do you or your group feel that packet radio is a productive mode for Field Day?

Al is interested in what were your most productive bands and frequencies. His club, W1NRG, worked 2 meters only and made 38 contacts. They were going to work HF also, but the CW operation interfered with the HF packet radio transceiver "real bad." Please drop a note to Al via N1API @ N1API

from Al Kaiser, N1API

SOVIET UNION ON PACKET RADIO!?

On June 28 at 0324Z, Bill Slack, NX2P, worked UA3CR via packet radio on 14.105 MHz. Bill saw UA3CR trying to connect to a VE2 station, which he was unable to copy and, after the connect to the VE2 was unsuccessful, Bill attempted to connect to the Russian station. It took about 20 retries to make the connection because UA3CR had his transmit and receive frequencies offset. (Bill guessed there was an offset when he did not make the connection after the sixth retry. UA3CR had a good signal, Bill was running 1000 watts and the band was empty at his end, so he started moving his frequency a little until he got a response to his connect request, then he adjusted his RIT so he could decode the response and, sure enough, the connection was made.)

Bill noted some oddities while connected. Some of the packets being sent to him were unnumbered information frames and he saw a packet sent with a frame number of 1 get repeated with a frame number of 2. All of Bill's packets were ACKed (except the last packet when he retried out) and UA3CR apparently received what Bill sent since he noted Bill's name and QTH. UA3CR said his name was Leo, but Bill did not get his QTH. The two were connected for about 5 minutes (averaging 3 retries) until the band dropped out and the connection was lost to retries.

Bill is interested in any comments others may have as, last he had heard, Soviet stations were not on packet radio.

from Bill Slack, NX2P

VK2 6-METER BAND PLAN

The New South Wales (Australia) state repeater committee discussed the use of packet radio on 6 meters on May 13. The discussion was relevant to FM usage in the 53 to 54 MHz section of the band (packet radio using AFSK in the SSB end of the band was not discussed).

With new repeater allocations and the standardization of 1-MHz repeater offsets taken into consideration, it was decided to recommend the following frequencies as a packet radio sub-band in the simplex area of the band.

53.000 MHz	PBBS forwarding network
53.025 MHz	General usage
53.050 MHz	General usage
53.075 MHz	General usage (note 1)
53.100 MHz	General usage (note 2)

Note 1. This frequency should not be used until the 6-meter repeater in VK3 changes its input frequency to the new offset of 52.675 MHz.

Note 2. This frequency is believed to have been used by others as a simplex net frequency in the past and may still be in use.

It cannot be emphasized strongly enough that this is not a national band plan, but will be submitted as a recommendation to the federal body for acceptance as such. In the meantime, it can be considered as a temporary expedient as band plans can take many months to obtain acceptance.

from Barry White, VK2AAB
via The Australian Packeteer

GATEWAY CONTRIBUTIONS

Submissions for publication in Gateway are welcome. You may submit material via the US mail to:

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75 Kreger Drive
Wolcott, CT 06716-2702

or electronically, via CompuServe to user ID 70645,247. Via telephone, your editor can be reached at 203-879-1348 on evenings and weekends, and he can switch a modem on line to receive text at 300, 1200, or 2400 bauds.

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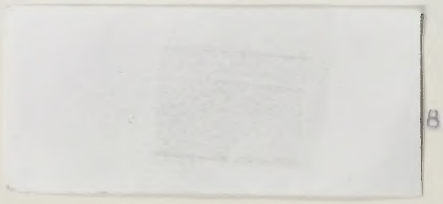

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